CLAIMS

What is claimed is:

1. A communication control device for periodically sending probe messages, one at a time, via a communication bus to a plurality of device addresses to detect the presence of devices located on the bus at the device addresses, the communication control device comprising:

a processor;

a memory;

a first address list containing a first set of device addresses;

a second address list containing a second set of device addresses;

a third address list containing addresses reserved for communication control devices; and

a routine stored in the memory and adapted to be executed by the processor to select the plurality of device addresses to which a probe message will be sent from among the first, second and third address lists, wherein the routine causes each device address in the third address list to be selected more frequently than each of the device addresses in the first and second address lists.

2. The communication control device of claim 1, wherein the routine comprises a first routine, and further including a second routine stored in the memory and adapted to be executed by the processor, wherein the second routine is further adapted to send probe messages to each of the device addresses selected from the first, second and third address lists to determine whether a device is located at each of the selected device addresses.

3. The communication control device of claim 1, wherein the routine comprises a first routine, and further including a second routine stored in the memory and adapted to be executed by the processor, wherein the second routine is adapted to send a probe message to each device address selected from the third address list, and wherein the second routine is further adapted to cause the communication control device to relinquish control of the bus upon receiving a response to a probe message sent to a device address selected from the third address list.

4. The communication control device of claim 1, wherein the third address list contains a maximum of two device addresses.

5. The communication control device of claim 1, wherein the third address list contains a maximum of three device addresses.

6. The communication control device of claim 1, wherein each of the first, second and third address lists contains a maximum number of device addresses and wherein the maximum number of device addresses contained in the third address list is less than the maximum number of device addresses contained in the first address list and is less than the maximum number of device addresses contained in the second address list.

7. The communication control device of claim 6, wherein the routine further causes the device addresses to be selected from among the first, second and third address lists in an alternating manner.

8. The communication control device of claim 7, wherein the routine further causes each device address selected from each of the first, second and third address lists to be selected in a sequential order with roll over relative to the other device addresses selected from that list.

9. The communication control device of claim 1, wherein a frequency at which any device address in the third address list is selected is sufficient to prevent a set of active devices that are coupled to the communication bus from reaching a fault condition in the event that communication on the bus is temporarily interrupted.

10. The communication control device of claim 1, wherein the first address list contains device addresses reserved for addresses of permanent devices.

11. The communication control device of claim 1, wherein the second address list contains device addresses reserved for addresses of temporary devices.

12. The communication control device of claim 1, wherein the communication control device comprises a link master device.

13. The communication control device of claim 12, wherein the link master device comprises a hand-held link master device.

14. The communication control device of claim 12, wherein the link master device comprises a back-up link master device.

15. The communication control device of claim 1, wherein the communication control device comprises a Fieldbus device.

16. A communication system for periodically sending probe messages, one at a time, via a communication bus to a plurality of device addresses to detect the presence of devices located at the device addresses, the communication control system comprising:

a memory;

a first routine stored in the memory and adapted to be executed on a processor for keeping a first address list, wherein the first address list contains a first set of device addresses, and for keeping a second address list, wherein the second address list contains device addresses that are reserved for communication control devices; and

a second routine stored in the memory and adapted to be executed on a processor to select the plurality of device addresses from the first and second address lists to which a probe message will be sent.

17. The communication control system of claim 16, wherein the second routine is further adapted to cause each of the device addresses contained in the second address list to be selected more frequently than each of the device addresses contained in the first address list.

18. The communication control system of claim 16, wherein the second routine is further adapted to send a probe message to each of the device addresses selected from the first and second address lists and wherein the second routine is further adapted to cause the communication control device to relinquish control of the bus upon receiving a response to a probe message sent to a device address selected from the second address list.

19. The communication control system of claim 16, further comprising a third routine stored in the memory and adapted to be executed by the processor and further adapted to send probe messages to each of the selected device addresses to determine whether a device is located at each of the selected device address.

20. The communication control system of claim 16, wherein the first address list further comprises a third address list wherein the third address list contains a second set of device addresses, and wherein the second routine is further adapted to cause each of the device addresses contained in the second address list to be selected more frequently than each of the device addresses stored in the first address list and stored in the second address list.

21. The communication control system of claim 16, wherein each of the first and second address lists contains a maximum number of device addresses, and wherein the maximum number of device addresses contained in the second address list is less than the maximum number of device addresses contained in the first address list.

22. The communication control device of claim 21, wherein the second routine causes the device addresses to be selected from among the first and second address lists in an alternating manner.

23. The communication control system of claim 16, wherein the second address list contains a maximum of two device addresses.

24. The communication control system of claim 16, wherein the second routine further causes each device address selected from each of the first and second address lists to be selected in a sequential order with roll over relative to the other device addresses selected from that list and wherein a frequency at which any device address in the second address list is selected is sufficient to prevent a set of active devices that are coupled to the communication bus from reaching a fault condition in the event that communication on the bus is interrupted.

25. The communication control system of claim 16, wherein the second routine uses a Fieldbus communication protocol.

26. A method for controlling the order in which a plurality of device addresses are selected for transmission of a probe message on a bus to detect the presence of devices located at the device addresses on the bus, the method comprising the steps of:

selecting device addresses from a first address list;

selecting device addresses from a second address list; and

selecting device addresses from a third address list, wherein the third address list contains device addresses reserved for communication control devices.

27. The method of claim 26, wherein each of the device addresses in the third address list is selected more frequently than each of the device addresses in the first and the second address lists.

28. The method of claim 26, further comprising the step of sending a probe message to each of the selected device addresses to determine whether a device is located at each of the selected device addresses.

29. The method of claim 28, further comprising the step of relinquishing control of the bus upon receiving a response to a probe message sent to a device address selected from the third address list.

30. The method of claim 26, wherein the steps of selecting a device address from each of the first, second and third address lists includes the step of selecting each device address in a sequential order with rollover relative to the other device addresses in that list.

31. The method of claim 26, wherein each of the first, second and third address lists contains a maximum number of device addresses, and wherein the maximum number of device addresses in the third address list is less than the maximum number of device addresses in the first address list and is less than the maximum number of device addresses in the second address list.

32. A method for controlling the order in which a plurality of device addresses are selected from a first address list and from a second address list for transmission of a probe message on a bus to detect the presence of devices located at the device addresses on the bus, the method comprising the steps of:

keeping a first address list and a second address list, wherein the second address list comprises a list of device addresses reserved for communication control devices; and

selecting the device addresses from the first address list and the second address list, wherein each of the device addresses in the second address list is selected more frequently than each of the device addresses in the first address list.

33. The method of claim 32, further comprising the step of sending a probe message to each of the selected device addresses to determine whether a device is located at each of the selected device addresses.

34. The method of claim 33, further comprising the step of relinquishing control of the bus upon receiving a response to a probe message send to a device address selected from the second address list.

35. The method of claim 32, wherein the first address list comprises a plurality of address lists.

36. The method of claim 32, wherein the step of selecting the device addresses from the first address list and the second address list further comprises the step of selecting each device address in a sequential order with rollover relative to the other device addresses selected from that list.